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| EXAMINER | |
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| LEUNG, CHRISTINA Y | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/764,518 | MIYATA ET AL. |
| | Examiner | Art Unit |
| | Christina Y. Leung | 2613 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on 02 August 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1,3 and 5-16 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3 and 5-16 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 7-24-2007.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 5, 7-11, 13, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Egnell et al. (US 6,590,681 B1)** in view of **Nagel et al. (US 5,481,399 A)** and **Sridhar (US 5,778,118 A)**.

Regarding **claims 1, 5, and 7**, Egnell et al. disclose an optical transmission apparatus with an optical add/drop function used in an optical wavelength multiplex network (Figures 3 and 4), comprising:

an optical branching coupler (such as drop coupler 17e) for dividing an input wavelength multiplexed optical signal into a wavelength multiplexed optical signal, which is called a passing signal, and another wavelength multiplexed optical signal, which is called a dropping signal;

a filter (BP filters 21 in Figure 3, or BP filters 37e in Figure 4) for extracting a first optical signal at a predetermined wavelength from the dropping signal that is branched by the optical branching coupler;

a fixed wavelength transmitter (one of transmitters 13) for generating a second optical signal that is to be inserted, the second optical signal having one of a plurality of preset wavelengths;

a blocking filter (such as BB filters 31e) for blocking a third optical signal having one of a plurality of preset wavelengths contained in the passing signal that is branched by the optical branching coupler; and

an optical coupler (such as add coupler 23e) for inserting the second signal, and coupling the passing signal that passes the rejection/add filter with the second optical signal, the wavelength of the blocked third optical signal being the same as the wavelength of the inserted second optical signal (column 6, lines 5-67; column 7, lines 1-18).

Further regarding claim 1, Egnell et al. disclose a blocking filter and an optical coupler performing the functions of blocking, inserting, and coupling as recited in the claim, but they do not specifically disclose that the functions are performed by a rejection/add filter.

However, Nagel et al. teach a system that is related to the one described by Egnell et al. including an apparatus with a blocking/filtering function and an optical coupling function for adding and dropping wavelengths in an optical communication system (Figures 2 and 2A-C). Nagel et al. further teach a rejection/add filter that blocks an optical signal and inserts another optical signal, coupling the passing signal that passes the rejection/add filter with the inserted optical signal, the wavelength of the blocked optical signal being the same as the wavelength of the inserted optical signal (Figures 2B and 2C; column 4, lines 4-44).

Examiner further notes that the systems disclosed by Egnell et al. and taught by Nagel et al. each include optical amplifiers (for example, see Egnell et al., Figures 3 and 4, and Nagel et al., Figures 1 and 1A). Egnell et al. further discloses that it is desirable to reduce noise from amplified spontaneous emission (i.e., ASE; column 4, lines 50-63). Nagel et al. specifically teach that their filter is advantageously designed to reduce ASE noise (column 3, lines 51-61).

Regarding claim 1, it would have been obvious to a person of ordinary skill in the art to use a rejection/add filter that blocks an optical signal and inserts an optical signal as taught by Nagel et al. as the blocking filter and coupler in the system described by Egnell et al. in order to manufacture the two elements more efficiently as one element and also provide an additional filtering of the added channel to remove noise from the added channel.

Regarding claim 5 in particular, Egnell et al. further disclose that the wavelength of the second optical signal generated by the fixed wavelength transmitter 13 is discriminately preset for the optical transmission apparatus such that the preset wavelength of the second optical signal for the optical transmission apparatus is arranged to be different from a wavelength of a corresponding insertion signal for another optical transmission apparatus that is associated with the optical transmission apparatus, and the predetermined wavelength of the first optical signal extracted by the filter (i.e., BP filter 21 in Figure 3, or BP filters 37e in Figure 4) is arbitrarily set for the optical transmission apparatus irrespective of a wavelength of a corresponding signal to be extracted by the other optical transmission apparatus (column 6, lines 25-67; column 7, lines 1-67; column 8, lines 1-5).

Further regarding claims 1 and also regarding claim 5, Egnell et al. disclose fixed wavelength transmitters 13 wherein a wavelength of the second optical signal generated by the fixed wavelength transmitter is fixed, but Egnell et al. do not explicitly disclose that they comprise lasers. However, optical transmitters comprising lasers are commonly known in the optical communications art. Sridhar teaches an apparatus with an optical add/drop function (Figure 1) that is related to the one disclosed by Egnell et al., and Sridhar further teaches optical transmitters comprising lasers 81-84 (column 6, lines 56-67; column 7, lines 1-7). It would have

been obvious to a person of ordinary skill in the art to use lasers as taught by Sridhar as the transmitter in the system described by Egnell et al. in view of Nagel et al. in order to effectively output optical signals having particular wavelengths using commonly available and known elements.

Further regarding claims 1 and 5, and also regarding claim 7, Egnell et al. also disclose filters 21 or 37e but do not specifically disclose that they are variable wavelength filters wherein the predetermined wavelength of the first optical signal extracted by the filter is arbitrarily set. However, Sridhar further teaches variable wavelength filters 63A-63D, wherein an extraction wavelength of filter is capable of being arbitrarily set, and which are used in combination with fixed wavelength transmitters 81-84 like those already disclosed by Egnell et al.

Regarding claim 7 in particular, Egnell et al. do not specifically disclose that the filter is one of an AOTF, a dielectric multilayer filter, an FGB type filter, and a Fabry-Perot type filter. However, various wavelength filters are known in the optical communications art, and Sridhar teach that filters 63A-63D may comprise FGB/Bragg grating type filters or Fabry-Perot type filters (column 5, lines 53-67; column 6, lines 1-37).

Regarding claims 1, 5, and 7, it would have been obvious to a person of ordinary skill in the art to use a variable wavelength filter comprising a FGB type filter or a Fabry-Perot type filter as suggested by Sridhar as the optical filter in the system described by Egnell et al. in view of Nagel et al. in order to flexibly receive dropped signals having different wavelengths that may be arbitrarily set as desired in the communications network.

Regarding **claim 8**, Egnell et al. further disclose that the system includes a protection unit that comprises an optical coupler (such as coupler 23w) and an optical switch (such as switch

33w). Specifically, Egnell et al. disclose that one of the lines (for example, the "e" path as shown in Figure 4) is a working line while the other line (for example, the "w" path) is a backup line used for protection switching (column 9, lines 37-53). When traffic is switched to the protection line, switches such as switch 33w are switched to direct traffic to the protection line, and the traffic is coupled into the protection line with couplers such as coupler 23w.

Regarding **claim 9**, Egnell et al. further disclose an optical wavelength multiplex network, comprising: the optical transmission apparatus as discussed above with regard to claim 1 and a double optical loop network that comprises a hub and two optical loops wherein the two loops are configured to transmit signals in opposite directions with respective to each other (Figure 1; column 2, lines 40-44; column 4, lines 16-49). Particularly, they disclose that one of the nodes may serve as a hub (column 11, lines 21-33).

Regarding **claim 10**, Egnell et al. disclose that the hub comprises an optical demultiplexer, an optical coupler, an optical switch, and an optical multiplexer. Since Egnell et al. disclose that one of the nodes in the network may serve as a hub, they disclose that a hub would comprise an optical demultiplexer such as BP filters 37e, an optical coupler such as coupler 17e, an optical switch such as switch 39e, and an optical multiplexer such as multiplexer 35e as shown in Figure 4 as part of a node.

Likewise, regarding **claims 11 and 13**, Egnell et al. disclose that a hub comprises an optical filter such as BB filters 31e as shown in Figure 4 as part of a node, and/or a protection unit that comprises an optical coupler such as coupler 23w and an optical switch such as switch 33w. As similarly discussed above with regard to claim 8, Egnell et al. disclose that one of the lines (for example, the "e" path as shown in Figure 4) is a working line while the other line (for

example, the "w" path) is a backup line used for protection switching (column 9, lines 37-53). When traffic is switched to the protection line, switches such as switch 33w are switched to direct traffic to the protection line, and the traffic is coupled into the protection line with couplers such as coupler 23w.

Regarding **claim 16**, Egnell et al. disclose that the optical wavelength multiplex network is a loop-like network (Figure 1; column 2, lines 40-44; column 4, lines 16-49).

3. **Claims 3, 6, 14, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Egnell et al.** in view of **Nagel et al.** and **Asahi (US 6,195,186 B1)**.

Regarding **claims 3 and 6**, Egnell et al. disclose an optical transmission apparatus with an optical add/drop function used in an optical wavelength multiplex network (Figures 3 and 4), comprising:

an optical branching coupler (such as drop coupler 17e) for dividing an input wavelength multiplexed optical signal into a wavelength multiplexed optical signal, which is called a passing signal, and another wavelength multiplexed optical signal, which is called a dropping signal;

a fixed wavelength filter (BP filters 21 in Figure 3, or BP filters 37e in Figure 4) for extracting a first optical signal at a predetermined wavelength from the dropping signal that is branched by the optical branching coupler;

a transmitter 13 for generating a second optical signal that is to be inserted, the second optical signal having one of a plurality of preset wavelengths;

a blocking filter (such as BB filters 31e) for blocking a third optical signal having one of a plurality of present wavelengths contained in the passing signal that is branched by the optical branching coupler; and

an optical coupler (such as add coupler 23e) for inserting the second signal, and coupling the passing signal that passes the blocking filter with the second optical signal, the wavelength of the blocked third optical signal being the same as the wavelength of the inserted second optical signal (column 6, lines 5-67; column 7, lines 1-18).

Further regarding claim 3, Egnell et al. disclose a blocking filter and an optical coupler performing the functions of blocking, inserting, and coupling as recited in the claim, but they do not specifically disclose that the functions are performed by a rejection/add filter.

However, Nagel et al. teach a system that is related to the one described by Egnell et al. including an apparatus with a blocking/filtering function and an optical coupling function for adding and dropping wavelengths in an optical communication system (Figures 2 and 2A-C). Nagel et al. further teach a rejection/add filter that blocks an optical signal and inserts another optical signal, coupling the passing signal that passes the rejection/add filter with the inserted optical signal, the wavelength of the blocked optical signal being the same as the wavelength of the inserted optical signal (Figures 2B and 2C; column 4, lines 4-44).

Regarding claim 3, it would have been obvious to a person of ordinary skill in the art to use a rejection/add filter that blocks an optical signal and inserts an optical signal as taught by Nagel et al. as the blocking filter and coupler in the system described by Egnell et al. in order to manufacture the two elements more efficiently as one element and also provide an additional filtering of the added channel to remove noise from the added channel.

Regarding claim 6 in particular, Egnell et al. disclose that the wavelength of the second optical signal generated by the transmitter 13 is discriminately preset for the optical transmission apparatus such that the preset wavelength of the second optical signal for the optical transmission

apparatus is arranged to be different from a wavelength of a corresponding insertion signal for another optical transmission apparatus that is associated with the optical transmission apparatus, and the predetermined wavelength of the first optical signal extracted by the fixed wavelength filter (BP filters 21 in Figure 3, or BP filters 37e in Figure 4) is set for the optical transmission apparatus irrespective of a wavelength of a corresponding signal to be extracted by the other optical transmission apparatus (column 6, lines 25-67; column 7, lines 1-67; column 8, lines 1-5).

Further regarding claim 3 and also regarding claim 6, Egnell et al. disclose transmitters 13 but do not explicitly disclose that they comprise variable wavelength lasers. However, Asahi teaches an apparatus with an optical add/drop function (Figure 1) that is related to the one described by Egnell et al. in view of Nagel et al., and Asahi further teaches optical transmitters 301 comprising variable wavelength lasers that are used in combination with fixed wavelength receivers 302 like those already disclosed by Egnell et al. (column 3, lines 32-42 and lines 59-64; column 4, lines 63-67).

Regarding claims 3 and 6, it would have been obvious to a person of ordinary skill in the art to specifically include a variable wavelength laser as taught by Asahi as the optical transmitter in the system already described by Egnell et al. in view of Nagel et al. in order to flexibly transmit signals having different wavelengths as desired in the communications network

Regarding **claim 14**, Egnell et al. further disclose an optical wavelength multiplex network, comprising: the optical transmission apparatus as discussed above with regard to claim 3 and a double optical loop network that comprises a hub and two optical loops wherein the two loops are configured to transmit signals in opposite directions with respective to each other

(Figure 1; column 2, lines 40-44; column 4, lines 16-49). Particularly, they disclose that one of the nodes may serve as a hub (column 11, lines 21-33).

Regarding **claim 15**, Egnell et al. disclose that a hub comprises a protection unit that comprises an optical coupler such as coupler 23w and an optical switch such as switch 33w. Egnell et al. disclose that one of the lines (for example, the "e" path as shown in Figure 4) is a working line while the other line (for example, the "w" path) is a backup line used for protection switching (column 9, lines 37-53). When traffic is switched to the protection line, switches such as switch 33w are switched to direct traffic to the protection line, and the traffic is coupled into the protection line with couplers such as coupler 23w.

4. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Egnell et al.** in view of **Nagel et al.** and **Sridhar** as applied to claims 1 and 9 above, and further in view of **Adams et al. (EP 1063803 A1)**.

Regarding **claim 12**, Egnell et al. in view of Sridhar describe a system as discussed above with regard to claims 1 and 9 above including a hub. Egnell et al. further disclose that the hub comprises an optical demultiplexer such as BP filters 37e and an optical multiplexer such as multiplexer 35e as shown in Figure 4 as part of a node, but they do not specifically further disclose that the hub may comprise a MEMS.

However, Adams et al. teach a system that is related to the one described by Egnell et al. in view of Sridhar including an apparatus with an add/drop function in an optical network further including a ring structure and a hub (Figures 1 and 6). Adams et al. further teach that the hub may include a MEMS 650 (Figure 6; column 9, lines 38-58; column 10, lines 1-50).

It would have been obvious to a person of ordinary skill in the art to include a MEMS such as suggested by Adams et al. in the system described by Egnell et al. in view of Sridhar in order to flexibly direct certain wavelengths as desired (Adams et al., column 10, liens 18-38). Also, Examiner respectfully notes that Egnell et al. already disclose that the hub may comprise a switch such as switch 39e or 33w as shown in Figure 4 as part of a node, and Adams et al. also simply teach that MEMS are known types of optical switches. It also would have been obvious to a person of ordinary skill in the art to use a MEMS as suggested by Adams et al. as the switch already disclosed in the system described by Egnell et al. in view of Sridhar as a way implement the switch already disclosed by Egnell et al. that is advantageously small, low cost, and low power compared to other types of optical switches (Adams et al., column 10, lines 44-50).

***Response to Arguments***

5. Applicant's arguments filed 02 August 2007 have been fully considered but they are not persuasive.

In response to Applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Examiner respectfully disagrees with Applicant's assertion on page 5 of the response that combining the filter taught by Nagel et al. with the system disclosed by Egnell et al. would not be feasible. Although the context of the overall system taught by Nagel et al. may

include telemetry signals and amplifiers as discussed by Applicant, Examiner respectfully notes that the filter taught by Nagel et al. nevertheless is directed to the effective separation of and recombination of various wavelength signals in an optical communications system. Nagel et al. explicitly teach that the filter is used for effectively "adding" and "dropping" signals, functions which are similarly described in the system disclosed by Egnell et al.

Examiner notes that Nagel et al. specifically teach that "other signals in addition to the telemetry signal can be added" (column 4, lines 28-31). Examiner further notes that the system disclosed by Egnell et al. also includes optical amplifiers (see Figures 3 and 4, for example), and Egnell et al. further discloses that it is desirable to reduce noise from amplified spontaneous emission (i.e., ASE; column 4, lines 50-63). Nagel et al. specifically teach that their filter is advantageously designed to reduce ASE noise (column 3, lines 51-61)..

In response to Applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. However, so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
CHRISTINA LEUNG
PRIMARY EXAMINER